ANALYTIC 11 . 3 JANUARY 1951

ANALYTIC-SYNTHETIC

III

By F. WAISMANN

After this digression we may now resume the main line of the argument. In forming a concept like 'definition' we are grouping together a cluster of unequal things, held together only by a sort of family likeness. It is important to notice that this family likeness is itself of a *vague* kind, consisting of all sorts of similarities which need have nothing in common, just as, to use an example given by Wittgenstein, members of the same family may be alike in many different ways, *e.g.* may have the same abrupt manner of talking, the same way of smiling with the eyes, of bending the head, of knitting the brows, or the same expression of defiance. Not that all these features need be present: but now this, now that, and at another time some combination of them, thus giving rise to a boundless variety of possible ways of 'looking alike'. As with people, so with definitions. If we group cases of definition together according to their similarity, it is easy to see that the similarity resolves itself into a bundle of relations, holding at times only between the forms (expressions) of the definitions, at other times between the various jobs they perform. And it is also easy to see that many different ways of grouping can be adopted. Thus we have seen some of the reasons for excluding dictionary definitions, or for not classing ostensive definitions with others, etc. There is no *specific* feature to be found that is peculiar to all the situations in which the term 'definition' might be used. It should be noticed that much the same indeterminacy is characteristic of words such as 'explaining', 'describing', 'introducing' (into a notation), 'stating precisely', 'declaring the meaning', 'making intelligible', and scores of others.

My purpose in calling attention to these indeterminacies can now be seen. Any inexactitude in the idea of a definition will be reflected in a similar inexactitude in the conception of analytic: according as the boundary of what is called 'definition' is drawn more broadly or more narrowly, the class of expressions

to be included in the range of analytic will become larger or smaller. For example, if *definitions in use* are precluded, it can not be proved that the statement "If α is similar to β, β is similar to α" is analytic; if *recursive* definitions are precluded, it cannot be proved that a formula like "7 + 5 = 12" is analytic (in the sense of being valid on the ground of definitions only); without *implicit* definitions such as those referring to the concept of betweenness it cannot be proved that saying, *e.g.*, "If A, B and C are points on a straight line, and B is between A and C, then B is also between C and A" is analytic. If, on the other hand, *dictionary definitions* are permitted, almost *every* statement might be proved to be analytic. Our trouble is not with the last sort of definition which, for the purposes of the present paper, may be excluded; nor is it with any of the other types of definition just mentioned. Our trouble is with the sort of definition, or explanation, instanced by the word 'time'. Suppose one is asked whether "Time is measurable" is analytic —what ought one to reply? We are, perhaps, first inclined to answer, yes. What tempts us to do this is that it seems to be *part of the meaning* of 'time' that time should be measurable. Yet this claim can hardly be substantiated, *i.e.* there seems to be hardly any way of transforming the given expression step by step into a truth of logic. What we could do is, at the most, to point out some of the uses (such as 'timing', 'timepiece', 'what is the right time?' etc.) which seem to indicate that time is measurable. This, however, will lead only to a scarcely enviable position since there is no sharp line which separates those uses which, as one would say, are *characteristic* of the concept, from those which are not. Here all sorts of questions may be missed: Are you willing to say that the word 'time', before sand-glasses, water-clocks, or sun-dials had come into use, had a meaning different from that which it has now? Would you say that 'mythological time' must be something quite different, because, though Uranus was deposed by Cronus, and Cronus by Zeus, it is not possible to *date* these 'events', any more than it makes sense to ask whether the reign of Uranus lasted as long as that of Cronus? Would you be prepared to say that, in case the world was such that time could not be measured—say, because of the absence of sequences of recurrent events—time would not be what it is now? Here, I suppose, you may be inclined to say that it lies *in the nature* of time that it can be measured. But what do you mean by the expression 'it lies in the nature of time'? That this is part of the *definition* of the word

'time'? But as there is no definition to refer to, but only a use, forming a vast maze of lines, as it were, you will feel that this argument loses its point. On what, then, rests your assurance? Some people may turn to intuition, and take a more or less Kantian point of view. In order to see whether intuition can show the *necessity* of our statement ('time is measurable'), we have to consider some of the facts which underlie the measurement of time. One such fact is the existence of sequences of recurrent events, such as the tides, the seasons, the phases of the moon, the revolution of the starry sky, the oscillations of a pendulum, the vibrations of a spring, etc. That is by no means enough. It is easy to imagine the following case: when I compare two such sequences, I find that they stand in a certain constant ratio to each other which, for a given pair, *e.g.* moon phases and sidereal days, is always the same. But there is nothing impossible in the idea that, if I started from a different series, *.eg.*, the swings of a weather cock, and compared them with the events of another series such as thunderstorms or night frosts, I might *also* find a constant ratio between them, whereas comparing a member of the first group with a member of the second would lead to *no* constant relation. In other words, it makes sense to suppose that all the sequences in the universe should fall into two distinct classes, the members of the same class being correlated by well-defined constant ratios, whereas between members of different classes no such relation holds. Then time would, as it were, bifurcate into two distinct rivers (say, 'star time' and 'storm time'), each flowing at an even rate, and yet irregular when viewed from the other: it would have become impossible to establish a common all-embracing time scale for the whole universe. Experience teaches that all those sequences which are linked by constant ratios in fact fit only in one extensive system; those which fit badly or not at all to the one system, do not fit together in a rival system. But even that must not be taken as a irrefutable fact; there are certain doubts, connected with the moon's irregularity as to whether the ratio-linked sequences really fit together *precisely* in a coherent system, or whether in the long run this may not turn out to be illusory. We can, indeed, imagine that within historical periods 'irregularities' are scarcely noticeable which, on an astronomical scale, may pile up to such an extent as to make a chronology of the universe impossible. Why not, indeed, imagine that events of high frequency (vibration of strings, tuning forks, etc.) should be ratio-linked within short periods of

observation, a few minutes or hours only, but incommensurable for longer periods, a few weeks or months? In such a case the 'uniformity' of time's flow would be a very transient thing. A time of this sort may be likened to a space in which no measurement is definable, what is called a 'non-metrical', 'topological' space (*i.e.* the type of space jelly-fish would likely be familiar with if they were doing geometry and living in a world of liquids or jellified objects). Incidentally, time may be non-metric without being disorderly. Recitals of poems would always bring forth words in precisely the same order, though it would not be a proper question to ask whether one stanza lasts *as long* as another. The attempt to measure a period between two events would be like trying to measure the Reign of Terror in terms of thunderstorms or earthquakes.

The fact that only one system exists in which all correlated sequences are linked now assumes a profound significance. It is no less significant that the time scale, based on this system, is in keeping with our natural estimation of the lapse of time (for short intervals anyhow), and further that it leads to the formulation of *simple* laws of nature. That this should be so does not follow from the mere idea of a time scale; it is conceivable that the time scale of the clock should not lead to simple and transparent laws, and that it should first have to undergo some transformation before it could serve the purpose of rendering "the equations of mechanics as simple as possible", to use Poincaré's words.[1] That shows what an enormous variety of cases can be thought of in which time wouldn't be measurable in the way it actually is. I say all this, because looking at things in this light may loosen a position which prevents one from seeing the importance of certain facts. Once you are aware of the vast mass of evidence which is relevant to the case, you will be less inclined to think that time 'must' be measurable.

Consider a somewhat analogous case: can pain be measured? There is a temptation to say just the opposite here, that it lies in the nature of pain that it can*not* be measured. But suppose that psychologists had devised a technique for measuring pain, or at least for assigning numbers to pains in roughly the same way in which hardnesses are ordered according to Mohs' scale. We may imagine that an idiom has come into use in which the doctor asks the nurse "What pain had the patient last night?" and she replies "Pain number 3". Ask yourself whether you would say in such a case that the word 'pain' has changed in meaning? Compare this question with the following: Supposing that certain astronomical speculations regarding departures

[1] The Value of Science, Ch. II.

from the constant ratios for the cycles of events had proved true (so that no universal and precise time scale could be set up), would you say that the word 'time' had now a new meaning? Now all this obviously hinges on the absence of a definition of 'time', or, more generally, on the absence of a *precise grammar* of this word. That brings me to the crucial point. When we were asking this sort of question, namely, whether the meaning of 'time' or 'pain' changes when a method of measuring is introduced, we were thinking of the meaning of a word as *clear-cut*. What we were not aware of was that there are no *precise rules* governing the use of words like 'time', 'pain', etc., and that consequently to speak of the 'meaning' of a word and to ask whether it has, or has not changed in meaning, is to operate with too blurred an expression.

4. Contingent and necessary

You may feel the same sort of difficulty if asked whether it is just a *contingent fact* that time is measurable? You may be dissatisfied, indeed very reluctant, to call that mere chance; one of the reasons for your reluctance, I suppose, is that you picture time as a straight line which can be divided, and subdivided, into equal intervals; this picture is so deeply engraved upon you that you feel unable to part with it. It is like trying to persuade a geometer to give up his diagrams. Indeed, the grammar of temporal relations is the same as the grammar of the relations between points on a straight line. There is an isomorphism between the two systems. Once you have noticed that, you may be inclined to say: "Though 'time is measurable' and 'rock salt is cleavable', sound superficially alike, they are very different: the one is accidental, the other is not." And you say that perhaps in the tone of a man who is calling attention to a notorious fact. But in saying this you do not want to object to any of the facts which make it possible to measure time. You do not want to state, or deny, any fact at all. What you don't see is that you are *irresistibly urged* to use a certain mode of representation which means a lot to you, in fact *that* mode which enables you to visualize with the greatest ease all sorts of temporal relations. As so often in philosophy, a statement appears so convincing precisely because it is no statement, but the obscure expression of a desire to use certain images, or a certain pictorial representation, to satisfy certain needs.

All that, I suppose, makes you reject the idea that it is just an accidental fact and no more that time is measurable. On the other hand, you cannot maintain that what this sentence

expresses is a *necessary truth*. For you do not want to deny that under certain specifiable conditions it would be untrue. This puts you in a peculiar position. It is as if two forces were acting upon you in opposite directions, and you were attempting to *follow them both at the same time*. So you feel on the one hand a strong reluctance to say that what the sentence expresses is a *contingent fact*, but on the other hand you are equally disinclined to say that it is *necessary* in the sense that its opposite is unthinkable. Or you may feel a tendency to say—if it was not too absurd—that what the sentence expresses is contingent *and* necessary at the same time. Of course, you don't really want to say it, and yet you may feel a slight temptation to say this very thing.

The reason for this wavering between opposite poles is that this is a case in which the philosophical antithesis "contingent-necessary" loses its edge. The sentence "time is measurable" exemplifies a wide class of statements which, so to speak, are on the borderline between necessary and contingent, the *a priori* and the empirical. Other such statements are: I see with my eyes and hear with my ears; every experience is *someone's* experience, *i.e.* any experience, when it occurs, belongs to someone who *has* this experience; two people cannot share a pain, though it may well be that they have pains which are in every respect *alike*; you cannot look directly into another man's mind to see what is going on there: experience is eternally *private*; I cannot feel pain outside my own body (except, perhaps, in an amputated limb); I have never migrated from my body into another one, nor have I ever had two bodies; I do not choose the mouth to speak with; a material object has a certain *permanency*, it doesn't suddenly vanish into nothingness; space has no more than three dimensions.

Now the first thing that strikes one about all these expressions is that each of them can be used in two senses, a *trivial* or everyday sense, and in an *important* or exciting sense. If, for instance, I were to tell you that time is measurable, you may well reply, "*Of course* it is; but what of it?" In this reply you seem to dismiss my remark as a sort of platitude. Indeed, viewed in a commonsense way the expression presents nothing remarkable. Suppose now I draw your attention to the possibility that recurrent events may *not* be linked by constant ratios in a single extensive system, but either in several such systems (each giving rise to a time scale of its own with no correlation between them), or *in no system at all*. Indeed, why should the vibrations of a balance-wheel keep so constant with the phenomena of the starry heavens such as the eclipses of the moon? Why should the

periodic changes in brightness observed in the Cepheids in the utmost depths of space be commensurable with terrestrial events such as the swings of a pendulum? Why should not such sorts of events, or indeed *any* others, behave capriciously like gusts of wind, showers or volcanic eruptions? Nature, for all we know, might never have presented to us *any correlated* systems, and then the measuring of time would be an impossibility. There is no *a priori* reason that this should be so. The fact that sequences *can* be correlated is established by observation; its mystery is not dispelled by saying that time flows 'evenly' (Newton) or that time and its properties are *necessary* conditions for the possibility of knowledge (Kant): for it is certainly possible to think of such experiences as would frustrate any attempt at setting up a time scale. Not only that, the time scale obtained in the ordinary way (grounded on correlated sequences), is precisely that which lends itself to a very simple formulation of physical laws: Newton's laws of motion, Maxwell's field equations, etc., hold for ordinary time, not for time lapses defined in terms of frosts, showers, or veerings of a weathercock. That reveals a very remarkable fact: that ordinary time leads to the discovery of clear and simple rules, and thus helps us to unveil the secrets of nature, to penetrate to an underlying timeless Order of Things. Now would you say that this is just a strange coincidence, an 'accidental fact' like that that my hair is turning grey? If you look at the question in this light, you can hardly escape the impression that there is something profound, almost mysterious behind the fact that time is measurable. You may now feel that you have got hold of something that has a deep, *metaphysical* significance, pointing to some 'rationality' inherent in existence; *i.e.* you lose a certain commonsense complacency, and you are led to wonder. (A philosopher is a man who is able to wonder at the obvious.) And now notice how you may, at one time, pronounce the words "time is measurable" in a dry, matter-of-fact tone, and at another time in a solemn tone as if you were saying something charged with hidden meaning.

Or consider for a moment the fact that there are material objects, solid, permanent, hardly changing in figure and size, in short "practically rigid bodies", and that geometry is connected with the existence of this sort of objects. Would you say that this is just an accidental circumstance? You may, and you may not. There is obviously no reason whatever, you may argue, why the world shouldn't be otherwise; for instance, if it comprised liquids and gases only, metrical geometry could not

be applied. Looked at in this way, the existence of such bodies seems to be a contingent fact. From another aspect, however, geometry seems to be the *very basis* of what may be called a *rational understanding* of the material world, at least of an important side of it. (Think of the rôle played by geometry in the conceptions of Descartes, Spinoza, Kant, or again in the shaping of scientific ideas from Newton to H. Hertz and Einstein). Anyhow, geometry seems to have set the example to all research. Considering all this, you may now ask in a puzzled tone, " How *can that be accidental* which leads to a rational insight into the nature of space? " It is as if certain *obvious* features of the everyday world over which, up to now, we have been passing heedlessly, suddenly lost their commonplaceness and took on a new, hidden significance.

The same shift of meaning may occur when you consider an expression like " Every experience is the experience of a person, *i.e.* it occurs in somebody's mind ". At first this sounds like a truism. Yet, if you ponder over it a while, you may say to yourself in a puzzled tone, " Surely, that can't be all, there is something more to it than this. There are no such things as ownerless experiences floating in mid-air, they must be experiences *of* someone who *has* them ". The very fact that experiences do not occur by themselves seems now to take on a tremendous significance.

In all these cases you notice that expressions which have a trivial use in daily life, when made part of certain trains of thought, lose their triviality, become, as it were transcendentalised, and acquire metaphysical stature. And with this goes an equally peculiar shift in the senses of most of the words used in the new context, such as ' time ', ' reality ', ' necessary ', ' rational ', and many others. A word can on one interpretation have a solemn resonance, although in another context it seems trivial, shallow. That makes intelligible that peculiar hovering of words between triviality and " significance " and the tendency to turn from the one into the other which is so characteristic of metaphysics. Incidentally, something of the same kind can occur outside philosophy in common speech, as when we speak of a ' vast panorama ' seen from a high mountain, and, on the other hand, of the ' vastness ' of space, just as if ' vast ' meant the same in both cases. It is as if, once having noticed the relativity of all size, we become no longer overwhelmed with the expanse before us ; and so the peculiar feeling-tone, originally associated with the sense of vastness which the *sensuous* impression conveys to us, is, so to speak, spirited away to some other realm, *e.g.*, to

space. The word ' vast ' now becomes, in a way, meaningless ; but the point is that its *aura* has been transferred elsewhere ; it is as if the word, detached or disembodied as it is, preserved its weight, its soul without its substance.

Sometimes you will observe just the opposite phenomenon, that some idea loses the peculiar fascination it exerts on our minds. For instance, so long as we think that the earth is unique among the heavenly bodies, we are tempted to attribute to that a deep, metaphysical significance, which, however, evaporates, once the earth is seen to be just one planet amongst many others. Similarly, Euclidean geometry may become a source of bewilderment when it appears to us as remarkable, mysterious, unlike anything else, and we get fascinated by—or shall I say obsessed with?—the idea that this geometry must be of transcendental importance, until the spell is broken, a broader view opens up before us, and a whole cluster of geometries is seen, grouped around Euclidean geometry according to similarities in their logical structure. Once the latter is collated with its natural environment, it loses its disturbing air of uniqueness and becomes, in a way, trivialized. And the same goes for logic. What we do in such cases is that we try to give a *synoptic presentation* : we silence the questionings which resemble a problem by setting a number of similar cases side by side. And it is characteristic that the mere juxtaposition of cases suffices to dispel our disquietude. For that shows that our puzzlement springs from a failure to see things in their true perspective.

After having shown in these examples the peculiar tendency of certain statements to turn from the trivial, everyday sense to a profound, metaphysical one, or to hover between the two, I want to bring out a further point. All these examples are puzzling expressions in that neither of the labels ' contingent ', ' necessary ' is exactly to the point. I shall do this by discussing two examples.

Consider the sentence " I see with my eyes ". At first sight it seems to state a contingent fact ; and there is an obvious truth in this, for if I close my eyes I lose sight of everything I see. But that it is different from an ordinary statement of fact can be seen if it is compared with such a statement as " I eat with a knife and fork ". It is easy for me to imagine that I do without them (*e.g.* when eating asparagus) ; but can I imagine that I see without eyes? If someone were to tell you " I see you quite distinctly with my eyes shut ", what would you make of it? That this is glaringly untrue, or that it is a contradiction in terms? How *can* he see without eyes? What could ' see ' mean here?

Plainly not what it normally means. Is it not *part of the meaning* of 'I see X' that I should have my eyes open, and not only have them open, but also look in the direction of X (disregarding for a moment such things as mirror reflexions, etc.)? If so, the sentence in question must clearly be self-contradictory.

It would be no argument to say that one can see an after-image with one's eyes shut; for it is plain that in this case 'seeing' is used in a different sense. But let us see in what this difference consists. When I say, "I see the clock on the mantlepiece", this implies that there is a clock there, *i.e.* it implies that what I see is something real, existing independent of myself; *that is the way we use* the verb 'see' in normal (perceptual) situations. But when I say, "I am seeing an after-image", I do not mean to say that there actually are, independent of myself, certain funny things, called 'after-images', which can be seen by me and by no one else. What is true is only that in order to describe this particular experience, I can make use of the perception verb 'see'. On the other hand, as I don't want to say that I 'see' after-images in the sense in which I see the clock when I look at it, I am perhaps inclined to say some such thing as "It is *as if* I see after-images", thus making it quite clear that I do not perceive any actual objects. Instead of this, I may use the more idiomatic phrase "I am seeing after-images". The uncommon construction is here quite apposite as an indication that I am also using the verb 'see' in an uncommon sense. For normally we don't say "I am seeing the clock", *i.e.* we don't use the continuous present tense of the verb 'see' (except in such phrases as "I am seeing the sights"). Another way of bringing out the difference is to say something like this. It is characteristic of the one usage that I may say, "I see you when I look at you; if I don't look at you, I don't see you"; but it would be ridiculous to say, "I see after-images when I look at them; if I don't look at them, I don't see them". In fact, we all know that no such condition attaches to seeing after-images, dark spots, etc. On the contrary, they have a way of being there no matter where I turn my head or where I look. I can neither look *at* them nor look *away* from them, because there is nothing for me to do which is analogous to looking at a thing, except perhaps (what would be highly misleading) *paying heed* to them. Unless you are willing to accept so strained an interpretation, you have to admit that it makes *no sense* to speak of 'looking' in the latter case. This suggests that the peculiar sense of 'seeing' that interests us here might be characterised in the following way: "I am seeing X = I see X though I cannot look at X";

'cannot' mean here: "it makes no sense to talk of 'looking'". Now the whole point of the argument is that there are two senses of the verb 'see' corresponding to two distinct patterns of usage, but not two senses of the verb 'eat', corresponding to "eating with a knife and fork", and "eating without a knife and fork". We may, of course, draw as many distinctions as we like, we may, for instance, insist that in the last case, too, 'eating' is used in different senses; what is wrong is only to think that we can justify this distinction as a natural one.

Let us now resume the main thread of the discussion. When I said that it is *part of the meaning* of 'seeing' that I can see a thing only when my eyes are open, and when I look at it, it will, I hope, have become clear that this applies to one sense of the verb only. In *this* sense, then, saying "I see you with my eyes shut" must be some sort of contradiction; if so, saying, "When I see you, my eyes are open", must be some sort of *non-factual a priori* statement. That we are inclined to say, "When I see you, my eyes *must be* open", stressing the 'must be', in fact indicates that we feel the connection between the seeing and the eyes not to be an accidental one. I might also have said that the mention of the eyes in "I see you with my eyes" is *redundant* as all it means is that I see you; or again that saying "Whenever I see, I see with my eyes" scarcely conveys any information; indeed, it has a truistic ring like saying "Whenever I have a toothache, I feel it". No one ever says such a thing, except when he wants to *remind* another person of the meaning of a word, to drive home to him its implications; but apart from that, it doesn't tell us anything about facts. This, then, should clinch the argument that saying "I see you with my eyes shut" must be meaningless, viz., self-contradictory.

But suppose it was discovered that, in certain rare and strange circumstances, people can see with their eyes shut? Can I not imagine that, say, by rubbing my eyelids with a certain mixture, they suddenly become transparent like glass? Wouldn't you at least *understand* what I mean? Couldn't you, for instance, follow such a story from the Arabian Nights? Certainly; but what if I now ask you, "How can you even *imagine* such a thing, considering that it is self-contradictory? How can you give a *sense* to these words?" It seems that you *ought* not to be able to understand them. On the other hand, is it not quite easy to imagine such a situation? In calling your attention to such, if only fictitious cases, my object is to make you see to what an extent non-linguistic, experiential factors come into play here. Indeed, you may think up even more

fanciful situations in which a person may be said to see, for instance, with his skin. In case you feel uneasy about that, it is well to remember that something remotely similar to that can actually occur in blindness. I mean what is known as the 'facial vision' of the blind. Thus a blind man seems to perceive objects through the skin of his face; for instance, he can, to some extent anyhow, tell the shape of objects unknown to him, and that without using the sense of touch; some who are totally blind, it is said, have even the power of discerning a cloud on the horizon. That only adds to your reluctance to regard such sentences as meaningless. In fact, after you have vividly imagined a number of such possibilities, you may feel that there is *no point* in arguing from the use of language only; instead you may be prepared to say "Of course, it is *experieuce* which teaches that I cannot see without eyes." Yet at the same time you can't help being worried by this account, because you feel that it would be most unnatural to say that "When I see you, my eyes are open" is an empirical statement in just the same sense in which, "When I write, I hold a fountain pen in my hand", is. In this situation you may feel a strong need to use some such expression as this. The first statement, you will perhaps say, *if* it is empirical, is at any rate *less empirical*, *more a priori*, or *less contingent* and *more necessary* than the second; again you may say that the first statement is *very nearly*, or *almost* analytic, whereas its opposite, *i.e.* the statement "I need not have my eyes open when I see you" or "I can see you though my eyes are shut" comes *very close* to a contradiction without being one.

Again, consider the sentence, "Space has three dimensions". You will hardly be tempted to regard it as a contingent statement of fact, and yet you may hesitate to call it a necessary truth. The reason for this, I suppose, is that you fail to see *why* space should have three dimensions, and not, for instance, four. There is nothing like a *rational insight* into its truth. The statement, you will be inclined to say, is certainly not *as necessary* as a truth of logic such as $p \supset p$. In the latter case, I see not only *that* it is true, but also *why* it is true: it is a tautology, *i.e.* a symbol constructed in such a way that it cannot be false. I *understand* what it is that makes it a necessary truth. And the same goes for $2+2=4$. But to the assertion that space has three dimensions there seems to be nothing which corresponds to an insight, a deeper understanding. In logic, or pure mathematics, to speak with Frege, "we are not concerned with objects which we come to know as something alien from without through the medium

of the senses, but with objects given directly to our reason, and, as its nearest kin, utterly transparent to it".[1] But with space having three dimensions, you feel that you have just to *accept* it, to take it lying down, like any other fact which, as a fact, is *opaque* to reason. Following this line of thought, you may readily say to yourself: I see, it's like a contingent fact; no, it isn't like that because . . . , and here you produce a list of reasons. So, you go on arguing, it is more like a necessary truth; no, it can't be like that because . . . , and now you produce a list of counter-reasons. You are in conflict about what to say.

What you really want to say is perhaps, *not* so much that the statement is necessary, as that it is *non*-contingent. That you prefer to stress the absence of contingency rather than necessity, or again that you are inclined to speak of one statement being *less* necessary than another, betrays a tendency to blur that nice distinction. If you look more closely at the examples—which, by the way, are themselves very unlike—it will strike you that each of them is *far more obvious* and, perhaps, more *certain* than a statement of particular, current fact, and yet has not quite the force of a logical necessity. To give some illustrations: even if you had been immured all your life in a prison cell with impenetrable walls and without windows, you would know *for certain* that space goes on outside; you know *for certain* that space is behind your back; etc. such statements, it seems, are not quite contingent, and not quite necessary, not quite empirical, and not quite *logical*, they are half way between. What lies behind this curious impression?

To be continued

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HETEROLOGICALITY

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IN ANALYSIS (N.S. No. 16, March 1950) Mr. Lawrence ably criticises Russell's use of an alleged paradox (that of 'heterological' being homological, if heterological, and *vice versa*) as a proof of the thesis of language-hierarchies. I agree with his conclusions, but I do not think he brings out the main reason why it is an improper question even to ask whether 'heterological' is heterological or homological.

Some people introduce themselves on meeting strangers.

[1] "Foundations of Arithmetic", trans. Austin, p. 105.

Others do not do this. They might be distinguished as 'self-nominators' and 'non-self-nominators'. If Dr. John Jones, on meeting a stranger begins by saying 'Dr. John Jones' he acts as a self-nominator. So, too, if he says 'Captain Tom Smith', save that now he gives a pseudonym. If he says 'it's a fine day', 'I'm a doctor' or 'I'm a self-nominator (or a non-self-nominator)', then he has given a true or false description of the weather, his profession or his practice of announcing or withholding his name; and in the last case his action belies or bears out his remark. But he has not given his surname, Christian name, nickname or pseudonym. '. . . a self-nominator' and '. . . a non-self-nominator' are the tail ends of character descriptions. Such descriptions require that the person described has a name to give, though this is only referred to, not given. Epithets are not names, even when they carry references to names.

A perverse parent might name his child 'Non-self-nominator', as there was once a club named 'The Innominate Club'. The son might then correctly give his name as 'Master Non-self-nominator Brown'. But he would no more have belied his announcement than a big man does by introducing himself as 'Alderman Little'. Names are not epithets, even though the same vocables constitute an epithet in some language or other.

To say 'I am a self-nominator (or non-self-nominator)' not only is not to give one's name; it is not even to describe one's name, as I might describe my name by saying that it rhymes with 'smile'. Unfortunately the term of art 'description' is often used to cover idioms which, in ordinary life, would not be called 'descriptions' at all. No policeman would accept as a description the phrase 'my name' (in 'I never volunteer my name'). What I refer to with such expressions can, in principle, be specified or particularised. But ways of referring to things are not ways of answering consequential requests for information about those things. Very often we employ referring expressions, which also have a descriptive force, e.g. 'she' and 'yonder lame horse', and a hearer may get the reference while contesting the attribution of femininity or lameness.

For it to be true that I do or do not give my name, there must be a 'namely-rider' of the pattern "..., namely 'John Jones'". Nor could it be true that a person had a profession or a disease without there being a namely-rider, of the pattern "... namely, the Law" or "... namely, asthma". The namely-riders need not be known to the persons who make or understand the statements that have them. I know that there is a day of the week on

which I shall die, but I do not know what it is. The day of my death could not be *just* the day of my death, but no particular day of the week.

Like anything else, linguistic expressions can be described or misdescribed by appropriate epithets. An epitaph, a peroration, a sonnet, a phrase, or a word may be English, mispronounced, vernacular, full of sibilants or obscene. The vocabulary of philologists is necessarily full of epithets appropriate to linguistic expressions, as the vocabulary of botanists is of those appropriate to plants. The methods of finding out what epithets can be truly applied to particular expressions are (crude or refined) philological methods. The properties of expressions established by these methods are philological properties. Thus 'dissyllabic', 'of Latin origin', "rhymes with 'fever'", 'solecism' and 'guttural' are philological epithets, standing for philological properties.

Most epithets, like astronomical, pharmaceutical and botanical epithets, are not appropriate to linguistic expressions. Cottages, but not phrases, may be thatched or unthatched, tiled or untiled. Reptiles do or do not hibernate; adverbs neither do nor do not. When an epithet is not a philological epithet, the question whether or not it applies to a given expression is an improper question.

Philological epithets do not constitute a proper genus. There are widely different interests that amateur or professional philologists may take in expressions, and widely different questions that they can raise about them. Phonetic epithets are not congeners of stylistic, orthographic, grammatical or etymological epithets.

It is no accident that a philological epithet may stand for a property of expressions and itself be one of the expressions that has that property. 'English', like 'cow', is an English word, 'polysyllable', like 'Saturday', is a polysyllable. Conversely, a philological epithet may stand for a property the possession of which can be truly denied of that epithet. 'French' is not a French word; 'monosyllable' is not a monosyllable; 'obsolete' is not obsolete. The question whether the property for which a philological epithet stands does or does not belong to that epithet itself is a proper question, e.g. whether 'dactyl' is or is not a dactyl and whether 'mispelt' is or is not misspelt.

One may then construct two artificial parcels, one of those philological epithets which have the philological properties for which they stand; the other of those which lack the properties for which they stand. The first might be called 'self-epithets';

the second ' non-self-epithets '. ' Deutsch ' is a self-epithet, ' obscene ' a non-self-epithet. ' Written,' here, is a non-self-epithet ; in manuscript it was a self-epithet.

Now the question is supposed to arise "Are ' self-epithet ' and ' non-self-epithet ' themselves self-epithets or non-self-epithets? In particular, is ' non-self-epithet ' a non-self-epithet or a self-epithet? "

But before starting to wriggle between the horns of this dilemma, we must consider whether the question itself is a proper question ; i.e. whether ' self-epithet ' and ' non-self-epithet ' belong to the class of philological epithets at all. As we have seen, most epithets do not belong to this class, so we cannot assume that these two (invented) classificatory expressions do so either. Certainly at first sight they look as if they do belong to it, since we can ask whether ' monosyllabic ' is a self-epithet or not, and decide that it is a non-self-epithet. The predicate end of the sentence " ' monosyllabic ' is a non-self-epithet " does look like a philological epithet of ' monosyllabic '. It's a predicate of a quoted expression, isn't it ?

But, if we recollect that ' self-nominator ' and ' non-self-nominator ' were not names but epithets carrying references to unmentioned names, we may suspect that ' self-epithet ' and ' non-self-epithet ' are not philological epithets, but expressions carrying references to unmentioned philological epithets. And this suspicion can be confirmed.

How do we decide (*a*) whether words (including ' English ' and ' polysyllabic ') are English or polysyllabic, etc., and (*b*) whether words, like ' English ' and ' polysyllabic ', are or are not self-epithets? We decide questions of the former sort by (elementary or advanced) philological methods. We consult dictionaries, count syllables, use stop watches, and listen to linguaphone records. But we do not decide whether words are self-epithets or not by examining them by further philological methods. There is no visible, audible, grammatical, etymological or orthographical feature shared by ' French ', ' monosyllabic ', ' obscene ' and ' misspelt '. On the contrary, we call them ' non-self-epithets ' because we find by various philological methods that ' French ' is not a French word, ' obscene ' is not an obscene word, ' misspelt ' is not misspelt ; and we have decided to list as ' non-self-epithets ' all those philological epithets which lack the philological properties for which they stand. We find by philological methods that these and other quite different philological epithets stand severally for, perhaps, not even generically kindred philological properties, and that

the epithets lack the properties for which they stand; we then collect them together as 'non-self-epithets' not in virtue of any common philological properties that they all stand for but in virtue of their being alike in lacking the philological properties for which they severally stand. So 'non-self-epithet' and 'self-epithet' do not stand for any philological properties of expressions. Their use is to assert or deny the possession of ordinary philological properties by the epithets which stand for them. Their use *presupposes* the ordinary use of philological epithets in the description of expressions of all sorts (including philological epithets); it is not, therefore, a part of that ordinary use. 'Orthographic' is a self-epithet only *because* 'orthographic' both has and stands for a certain philological property, namely that of being correctly spelled. Unless there was an opening for this namely-rider, there would be no job for the expression 'self-epithet', just as there would be no job for the expression 'self-nominator' if there were no opening for such a namely-rider as "... namely, 'John Jones'". As 'self-nominator' carries a reference to a name which it is not and does not mention, so 'self-epithet' carries a reference to an ordinary philological property which it does not itself stand for.

At first sight, however, the statement that 'English' is a self-epithet does seem not merely to refer to but to mention the philological property of being in the English tongue. For we English speakers are all so familiar with the use of the word 'English', that we are tempted to suppose that to be told that 'English' is a self-epithet is to be told that 'English' is an English word. But this is not so. A person who knew no German but had been told the use of 'self-epithet' and 'non-self-epithet' could understand and believe the statement that the German adjective 'lateinisch' is a non-self-epithet. He would be believing that 'lateinisch' stands for some specific philological property or other (he would not know which) and that 'lateinisch' lacks that property. He knows that it is now proper to ask the rider-question 'Namely, which philological property?' since if this question had no answer, then 'lateinisch' could not be either a self-epithet or a non-self-epithet. For 'lateinisch' to be a non-self-epithet, it must be false that 'lateinisch' is *lateinisch*, whatever being *lateinisch* is. 'Lateinisch' could no more be *just* a non-self-epithet, without there being a specific, but as yet unmentioned, philological property which it lacked, than a person could be *just* christened, without being christened 'John' or 'James' or ...

'Self-epithet' and 'non-self-epithet' do not stand for any

of the specific philological properties which could be mentioned in the namely-riders for which they leave openings, any more than " christened '. . . . ' " is a Christian name. Logicians' category-words are not among the words listed under those category-words. ' Fiction ' is not the name of one of the novels catalogued under the librarian's heading of ' Fiction'. ' Self-epithet ' and ' non-self-epithet ' are not philologists' epithets, but logicians' ways of dividing philologists' epithets into two artificial parcels, which, naturally, are not among the contents of those parcels.

In this connection I adopt and adapt an important argument of Mr. Lawrence (p. 78). ' English ' is a self-epithet, because ' English ' is an English word. But ' self-epithet ' does not *mean* . . . ' is an English word '— else " ' Deutsch ' is a self-epithet " would be false, instead of being true. Or, if " ' English ' is a self-epithet " could be paraphrased by " ' English ' is an English word ", then since German words are not English and ' Deutsch ' is a German word, " ' Deutsch ' is a non-self-epithet ' would have to be true, when in fact it is false. Of itself, ' self-epithet ' tells us nothing about the tongues to which ' English ' and ' Deutsch ' belong, any more than about the tongue to which ' polysyllabic ' belongs, which is also a self-epithet. ' Either English or German or Lithuanian or a self-epithet " would be an absurd disjunction. So would any disjunction be absurd in which ordinary philological epithets were coupled by ' or ' with ' self-epithet ' or ' non-self-epithet '. ' Self-epithet ' and ' non-self-epithet ' convey no philological information about words. They are specially fabricated instruments for talking *en bloc* about the possession or non-possession by philological epithets of whatever may be the philological properties for which they stand. Such instruments are not among the philological epithets that they help logicians to discuss.

To put all this in the official terminology of ' heterological ' and ' homological '. We can say " ' obsolete ' is heterological," because ' obsolete ' has not gone out of fashion and ' obsolete ' *means* ' gone out of fashion '. We can say " ' polysyllabic ' is homological," because ' polysyllabic ' *is* a word of many syllables and *means* ' of many syllables '.

Now the words ' heterological ' and ' homological ' have and lack a number of ordinary philological properties. They are adjectives, polysyllabic, English (perhaps), cacophonous, aspirated and neologistic; they are *not* prepositions, slang, or of Latin origin. But what we are asked to decide is whether

'heterological' and 'homological' are themselves heterological or homological, i.e. whether among the philological properties which 'heterological' and 'homological' have and lack, they have or lack the philological properties of homologicality and heterologicality. But to ask this is to suppose that 'heterological' and 'homological' *do* stand for philological properties, i.e. that there could be words which were *just* heterological or *just* homological and not heterological or homological *because* lacking or possessing such and such ordinary philological properties. And this supposition is false. For to say that a word is heterological or homological is to refer to, without mentioning, some philological property (*not* heterologicality or homologicality) for which that word stands and which does or does not belong to that word. In using 'heterological' and 'homological' we are not mentioning word-properties, but referring to unmentioned word-properties. And references to unmentioned word-properties are not mentions of those or of extra word-properties, any more than references to unspecified diseases are themselves the specifications of those or of extra diseases. If unpacked, the assertion that 'heterological' is heterological would run :—"'Heterological' lacks the property for which it stands, namely that of lacking the property for which it stands, namely that of lacking the property . . ." No property is ever mentioned, so the seeming reference to such a property is spurious.

This seeming paradox arises from treating certain umbrella-words, coined for the purpose of collecting epithets into two families as if they were themselves members of those families. To ask whether 'heterological' and 'homological' are heterological or homological is rather like asking whether Man is a tall man or a short man. We do not need stature-hierarchies to save us from deciding whether Man is a tall or a short man ; or language-hierarchies to save us from deciding whether 'heterological' is heterological or homological. It is not even, save *per accidens*, a matter of minding our inverted commas but a matter of minding our grammar. Minding our inverted commas, in the required ways, *is* minding our grammar.

The same inattention to grammar is the source of such paradoxes as 'the Liar', 'the Class of Classes . . .' and 'Impredicability'. When we ordinarily say 'That statement is false', what we say promises a namely-rider, e.g. '. . . namely that to-day is Tuesday'. When we say 'The current statement is false' we are pretending *either* that no namely-rider is to be asked for *or* that the namely-rider is '. . . namely that the present

statement is false'. If no namely-rider is to be asked for, then 'The current statement' does not refer to any statement. It is like saying 'He is asthmatic' while disallowing the question 'Who?' If, alternatively, it is pretended that there is indeed the namely-rider, '. . . namely, that the current statement is false', the promise is met by an echo of that promise. If unpacked, our pretended assertion would run 'The current statement {namely, that the current statement [namely that the current statement (namely that the current statement . . .'. The brackets are never closed; no verb is ever reached; no statement of which we can even ask whether it is true or false is ever adduced.

Certainly there exist genuine hierarchies. My Omnibus 'Short Stories of O. Henry' is not a short story by O. Henry; nor is my batch of (five or six) Omnibus books a sixth or seventh Omnibus book. But 'I possess a batch of Omnibus books' has the namely-rider ". . . namely, 'The Short Stories of O. Henry', 'The Short Stories of W. W. Jacobs', etc., etc."; just as "I possess the Omnibus 'Short Stories of O. Henry'" has the namely-rider ". . . namely, 'The Third Ingredient', etc., etc." Obviously, we could go on to talk of the set of batches of Omnibus books in the possession of Oxford professors, and so on indefinitely. But at no stage can the mention of a set, or batch, or Omnibus *be* the mention of what it carries a reference to, but is not a mention of, namely what would be mentioned in their promised namely-riders, if these were actually provided.

In ordinary life, we commonly have different words with which we make our different references, such as 'Centre Forward', 'team', 'Division', 'League'. This prevents there being any linguistic temptation to talk as if a team might sprain its left ankle, or as if the League might win or lose the Cup. If we stick to one such word the whole way up the ladder (like 'class' and 'number') we are so tempted. Having failed to prevent such confusions arising, we have to seek remedies for them after they have arisen.

There are genuine hierarchies, so there exist (efficient and inefficient) ways of talking about them. But our (quite efficient) way of talking about footballers, teams, Divisions and Leagues is not itself to be described as a hierarchy of languages or ways of talking. Talking about the Berkshire League is not talking about talking about talking about the individuals who play, e.g. for a given village. Certainly the talk about the League is on a high rung of generality; a whole échelon of namely-riders goes

unstated. But no inverted commas are improvidently omitted. The relation of referring expressions to their namely-riders is not to be elucidated in terms of the relation of comments on expressions to the expressions on which they are comments. On the contrary, the relation of a comment to the expression on which it is a comment is (when it refers to this without citing it) just another case of the relation of a referring expression to the content of its namely-rider.

Many of the Paradoxes have to do with such things as statements about statements and epithets of epithets. So quotation-marks have to be employed. But the mishandling which generates the apparent antinomies consists not in mishandling quotation-marks but in treating referring expressions as fillings of their own namely-riders.

A team neither does nor does not sprain its left ankle. It is not one of its eleven possessors of left ankles, though a mention of the team carries a reference to these possessors of ankles. 'Heterological' neither has nor lacks any philological property for which it stands. It is not one of the philological epithets to which it and its opposite number are special ways of referring.

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Φ-SYMBOLS

By ARTHUR SMULLYAN

GOODMAN'S thesis[1] has a certain arresting quality. It is that two different predicates can never have precisely the same meaning. Since we know this thesis to be mistaken, our only problem is to locate the confusion which generates an aura of plausibility about Goodman's argument.

Now, Goodman undertakes to provide an analysis of synonomy in extensional terms. He allows, on p. 3, that "unicorn" and "centaur" differ in meaning though they are extensionally equivalent. But he considers it possible to explain this difference of meaning by reference to the fact that there are differences in what he calls their *secondary extensions*. A secondary extension of a predicate, *s*, is always the extension of a compound predicate which contains *s* as a component. For example, the class of unicorn-pictures is a secondary extension of the word, "unicorn", whereas the null class is the primary extension of the predicate, "unicorn". Then Goodman's suggestion is: "two terms have the same meaning if and only if they have the

[1] Goodman, Nelson, "On Likeness of Meaning," ANALYSIS, Vol. 10, No. 1, Oct. 1949, pp. 1–7.

same primary and secondary extensions." (p. 5). Thus, despite the fact that "unicorn" and "centaur" have the same (null) primary extension, they are not synonomous, according to Goodman. For there are centaur-pictures which are not unicorn-pictures and there is, therefore, a difference in the secondary extensions of these terms.

Goodman then gives us what purports to be a demonstration that different predicates always do differ in respect to some secondary extension or other. And Rudner has argued[1] from Goodman's premisses that a more startling generalization holds true: namely, that no two occurrences of the same predicate have the same secondary extension and therefore the same meaning. Also, Rudner indicates that Goodman now accepts Rudner's extension of Goodman's original thesis.

Goodman's argument I paraphrase thus: Let "ψ" and "ϕ" be any two distinct predicates. The letters, "ϕ" and "ψ" are, in this discussion, to be interpreted not as variables but as specific predicates of any kind whatsoever. Then "ϕ" is a ϕ-symbol and "ψ" is a ψ-symbol Also, "$\phi.\text{-}\psi$" is a ϕ-symbol. But "$\phi.\text{-}\psi$" is not a ψ-symbol. Hence, "$\phi.\text{-}\psi$" belongs to the secondary extension of "ϕ" but not to the secondary extension of "ψ". Since the predicates, "ϕ" and "ψ" differ in respect to secondary extension, they differ in meaning, no matter what "ϕ" and "ψ" may be, provided only that they are syntactically different predicates. And Rudner argues that even this last qualification is not necessary.

I ask the question, what is a ϕ-symbol? Goodman will not say that it is a symbol designating or, in some manner, associated with ϕ. For he will not say that predicates may legitimately be employed in a substantival fashion. What then does he mean by a ϕ-symbol? I wish to discuss three possible interpretations of Goodman's meaning.

I

Goodman may mean, when he says that **s** is a ϕ-symbol, that $(x)\ (\phi x \supset \mathbf{s}Ax)$; that is, if anything is ϕ, then **s** applies to it.

II

He may mean that $(x)\ (\mathbf{s}\,Ax \supset \phi x)$; that is, if **s** applies to an object, that object is ϕ.

III

Or he may mean that $(x)\ (\psi x \equiv \mathbf{s}Ax)$; that is, if and only if an object is ϕ does **s** apply to it.

[1] 'A Note on Likeness of Meaning', Analysis 10; 5 April 1950, pp. 113-118.

I am using the verb " to apply " in the same way that Goodman himself uses the verb in the body of his essay.

Now none of these three interpretations agrees with what Goodman has to say about ϕ-symbols and secondary extensions. Accordingly, Goodman means by ϕ-symbols something we know not what, unless he tells us. It is all very well to say that a unicorn-symbol is a symbol of a unicorn. We all speak in this way. But in everyday life we do not draw philosophical consequences from this habit of speech. In particular, Goodman's argument depends on assumptions or definitions which he does not make explicit. The function of this discussion is to throw doubt on the significance of expressions of the form, " ϕ-symbol ", as they occur in the body of Goodman's paper. I shall in the course of my criticism of the definitions proposed above, have to consider certain other alternative definitions, not so far mentioned.

I

Suppose :

s is a ϕ-symbol $\rightarrow$ df. (x) $(\mathbf{s}\mathrm{A}x \supset \phi x)$. Then the following consequences should be accepted by Goodman :

i) If **s** has null extension, then **s** is a ϕ-symbol.

ii) If (x) (ϕx), then **s** is a ϕ-symbol.

iii) " ϕ.-ψ " is a ϕ-symbol.

iv) If " ϕ.-ψ " has null extension, it is (by i) a ψ-symbol. This is denied by Goodman. Hence his definition of " ϕ-symbol " is not a correct explication of his meaning.

v) Every unicorn-symbol has null extension. It is therefore a centaur symbol. By the same reasoning, a centaur-symbol is a unicorn-symbol. Since this is so, " centaur " and " unicorn " have the same meaning. For they have the same primary and secondary extensions. This is another indication that Goodman does not mean by a ϕ-symbol one that applies to an object only if it is a ϕ.

vi) Goodman says that " ϕ.-ψ " is not a ψ-symbol. According to the present definition, however, this means that $(\exists x)$ (" ϕ.-ψ " Ax. $\sim\psi x$). But surely this is not in general the case. Thus, Goodman would say that " man but not human " is not a human-symbol. It seems to follow that something is a man but not human. The conclusion to be drawn, however, is that the definition, I, is not a correct elucidation of Goodman's meaning.

II

Suppose that :

s is a ϕ-symbol $\rightarrow$ df (x) $(\phi x \supset \mathbf{s}\mathrm{A}x)$. Then, clearly,

"$\phi.\text{-}\psi$" is not, in general, a ϕ-symbol. But this is contrary to Goodman's intention. For, as indicated, his argument requires that "$\phi.\text{-}\psi$" is a ϕ-symbol.

III

Suppose that:

$\mathfrak{s}$ is a ϕ-symbol $\rightarrow$ df (x) $(\phi x \equiv \mathfrak{s}\mathrm{A}x)$. Then we have the same difficulty as we experienced in II. "$\phi.\text{-}\psi$" is not necessarily a ϕ-symbol.

Goodman cannot avoid these difficulties by taking one of the above definitions and replacing the symbols of material implication or equivalence by corresponding symbols of modal implication or equivalence. For example, Goodman cannot say that he means by a ψ-symbol one that would apply to ψ's if and only if there *were* any. For he claims (on p. 2) that he finds it hard to understand the modal concepts of possibility, necessity and impossibility. Also, difficulties parallel to those discussed above would have to be faced. In any case, his programme appears to be to provide an *extensional* definition of synonomy and therefore of analyticity and other modal terms.

Since there is great difficulty about determining precisely what Goodman means by a ϕ-symbol, it is impossible to verify his deductions. Accordingly, it is by no means the case that if his definition of synonomy be granted his conclusions automatically follow.

However, though it is difficult to know what Goodman means by a ϕ-symbol and though his sceptical conclusions do not obviously follow from his premisses, it is of interest to examine this question carefully. And for the following reason. Suppose that synonomy were satisfactorily defined, or at least understood, in Platonic terms. Then it might plausibly be maintained that if two terms were synonomous, their secondary extensions would be identical. Then Goodman's reasoning, if sound, would go to show that Platonism is inconsistent. Consequently, I have attempted to determine if there is any stateable interpretation of "ϕ-symbol" by which Goodman would be able to enforce his nominalistic and, I think, nihilistic conclusions.

Recently it has been argued that analyticity has degrees. And Goodman has maintained that synonymity has degrees. Possibly there is some precise interpretation of these theses which I have not discovered and, possibly, when so interpreted, these doctrines are true and important. But it cannot, I submit, seriously be maintained that Goodman has proved in the paper now under discussion any proposition which at all bears upon the question.

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